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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,342	04/14/2004	Nicholas K. Eib	03-1810/LSI1P239	8664
24319 7590 01/26/2007 LSI LOGIC CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035			EXAMINER CHACKO DAVIS, DABORAH	
			ART UNIT	PAPER NUMBER
			1756	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/26/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/825,342

Applicant(s)

EIB ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-9,13,14 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-9,13,14 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13-14, 17-19, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13, at line 5, and 11, recites "the combination of tilting of the mirrors".

There is insufficient antecedent basis for this limitation in the claim.

Claim 13, at lines 5-6, and 11-12, recites "the relative displacement of the mirrors". There is insufficient antecedent basis for this limitation in the claim.

Claim 13, at line 7, recites "the image". There is insufficient antecedent basis for this limitation in the claim.

Claim 13, at lines 7-8, and 15, recites "the degree of tilting". There is insufficient antecedent basis for this limitation in the claim.

Claim 13, at line 8, recites "the degree of displacement". There is insufficient antecedent basis for this limitation in the claim.

Claim 13, at lines 4-5, recites "a piston displacement element", and claim 13, at lines 10-11, recites "a piston displacement element". Also, claim 13, at lines 3-4, recites "a plurality of tilted mirrors in a mirror array", and claim 13, at line 9-10, recites "a plurality of tilted mirrors in a mirror array". It is not clear if the piston displacement element recited in lines 4-5, of claim 13 is the same or different than the piston

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displacement element recited in lines 10-11 of claim 13. It is also not clear that the plurality of tilted mirrors in a mirror array recited in lines 3-4 of claim 13, is the same or different than the plurality of tilted mirrors in a mirror array recited in lines 9-10, of claim 13. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-6, 10, 13, 15-17, and 20, are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent Application Publication No. 2005/0068510 (Bleeker et al., hereinafter referred to as Bleeker).

Bleeker, in [0011], [0012], [0013], [0015], [0016], [0043], [0044], [0046], [0061], [0063], [0075], [0117], discloses a method of forming a pattern on the semiconductor wafer (device manufactured), by modulating light to a first portion of the radiation sensitive material layer on the substrate using a mirror array (individually controllable mirrors that are tilted, tilted mirrors and pistons or adjusters) incorporated with adjusters (first pattern), modulating light to another portion of the radiation sensitive layer on the substrate (shifting the substrate in the X and/or Y direction so that a different target

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portion of the substrate can be exposed, second feature of the pattern) using the tilted mirrors coupled with a plurality of adjusters, such as pistons (piston mirrors), such that displacement of mirrors occurs (path length adjusting), resulting in the modulation of the path length that corresponds to the varying intensities of interference during the exposures. Bleeker, in [0016], [0017], [0117], [0118], and [0119], discloses that the tilted mirrors (micromirror array) are form a separate part of the mirror array from the piston mirrors, and that the tilting and displacement modes (tilting, planar movement) are performed simultaneously (claims 1, 3-4, and 6). Bleeker, in [0118], discloses that the aberrations and focus deviations are reduced i.e., resolution is enhanced, due to incorporation of the plurality of adjusters (pistons) with the patterning array (mirror array) (claim 5).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, and 8, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application Publication No. 2005/0068510 (Bleeker et al., hereinafter referred to as Bleeker) in view of U. S. Patent Application Publication No. 2006/0077506 (Sandstrom).

Bleeker, is discussed in paragraph no. 4.

The difference between the claims and Bleeker is that Bleeker does not disclose

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that the adjacent mirrors of the tilt mirrors are controlled to generate a phase difference of about 520 degrees on a predetermined portion of the radiation sensitive layer (claims 2). Bleeker does not disclose that the tilt mirrors are controlled such that the adjacent mirrors generate a phase difference that ranges from 400 to 600 degrees on a predetermined portion of the radiation sensitive layer as recited in claim 8.

Sandstrom, in [0036], discloses that the adjacent mirrors of the tilt mirror array generate a phase difference of approximately 257 degrees (a total of about 514 degrees phase difference).

Therefore, it would be obvious to employ the tilt mirror configuration suggested by Sandstrom because Sandstrom, in [0036], and [0039], discloses that employing such a tilt mirror configuration (i.e., tilt angle formed by overtilting the mirrors) generates the claimed phase difference and favorable properties such as improved contrast at feature boundaries in both positive and negative resists.

7. Claims 7, 9, and 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application Publication No. 2005/0068510 (Bleeker et al., hereinafter referred to as Bleeker) in view of U. S. Patent No. 5,015,080 (Cassarly et al., hereinafter referred to as Cassarly).

Bleeker is discussed in paragraph no. 4.

The difference between the claims and Bleeker is that Bleeker does not disclose that two adjacent mirrors of the piston mirrors exhibit a 180 degree phase difference (claims 7, and 18). Bleeker does not disclose that two adjacent mirrors of the piston mirrors exhibit a phase difference of about 280 degrees (claims 9, and 19).

Cassarly, in col 4, lines 1-8, in col 5, lines 24-48, in col 6, lines 20-26, and in col 11, lines 1-25, discloses piston mirror arrays that exhibit adjacent mirror phase difference that ranges from 0 to multiples of 2π degrees.

Therefore, it would be obvious to a skilled artisan to modify Bleeker by employing the piston phase shifter mirror array configuration suggested by Cassarly because Cassarly, in col 6, lines 20-37, discloses that creating the claimed phase difference between mirrors results in a continuous phase across the combined beam that enables continuous scanning over a wide angle with minimized grating lobes.

Allowable Subject Matter

8. Claims 13-14, and 17-18, would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Response to Arguments

9. Applicant's arguments filed November 8, 2006, in regards to claims 1-2, 5-9, and 19, have been fully considered but they are not persuasive. The 102 and 103 rejections made in the previous office action (paper no. 20060606) over claims 1-2, 5-9, 19, have been maintained. Applicant's arguments, see Remarks, filed November 8, 2006, on page 7 of 9, at lines 2-7, with respect to claim 13 have been fully considered and are persuasive. The 102, and 103 rejection of claims 13-14, 17-18, have been withdrawn.

A) Applicants argue that Bleeker is inoperative as a 102 reference because the disclosure in the Bleeker reference (U. S. Patent Application Publication No. 2005/0068510) is not supported by the priority document (10/677,242).

The disclosure relied upon in Bleeker, viz., paragraph nos. [0011], [0012], [0013], [0015], [0016], [0043], [0044], [0046], [0117], [0118] etc., are disclosed in its priority application (10/677,242, i.e., U. S. Patent Application Publication No. 2005/0074906) in paragraph nos. [0011], [0012], [0013], [0014], [0015], [0016], [0036], [0037], [0038], [0039], [0042], [0043], [0055], [0056] etc., and is therefore a valid 102 reference and is supported by its priority document.

B) Applicants argue that none of the cited paragraphs of the reference discuss in anyway the simultaneous use of tilting and displacement at the same time to effectuate superior results.

In response to applicant's argument that "the simultaneous use of tilting and displacement at the same time to effectuate superior results", a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

C) Applicants argue that the cited art does not teach that the resolution enhancement features specifically refers to optical proximity correction features.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the resolution enhancement features refer to optical proximity correction features) are not recited in the rejected claim(s). Although the claims are interpreted in light of

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the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

January 22, 2007.



JOHN A. MCPHERSON
PRIMARY EXAMINER